

XIX. *Further Studies of the Tetriginæ (Orthoptera) in the Oxford University Museum.* By J. L. HANCOCK, M.D., F.E.S. (Chicago.)

(Second Paper.)

[Read June 3rd, 1908.]

PLATE XXII.

THE author takes this opportunity to acknowledge his gratefulness to Professor E. B. Poulton, F.R.S., Hope Professor of Zoology in Oxford University, for the privilege of studying the remainder of the collection of *Tetriginæ (Orthoptera)*. The latter collection consisted of one hundred and thirty-eight examples. Of this series, which are representative of widely varied localities, a number are new, some proving to be unique types. Still others are of historical value, having been collected by Wallace in the Malay Archipelago, and by Bates on the Amazon in South America. These insects formed part of the notable collection of W. W. Saunders, which was purchased and donated by Mrs. F. W. Hope to the Hope department of Zoology, University Museum. The author's first paper on the collection of *Tetriginæ* in the University Museum appeared in the Transactions of the Entomological Society of London; \* the present paper is a continuation of that contribution.

Section *LOPHOTETTIGIÆ*, nov.

In this new section the body has a general resemblance to *Tripetalocera*. The vertex is often greatly widened, transverse, the eyes substylate; the structure of the antennæ is especially characteristic, being filiform and strongly incrassate, or toward the apices often more or less gradually but distinctly flattened or dilated; the pronotum is more often truncate anteriorly or little excavate at the middle of the front margin, and backwardly prolonged into a posterior process; the median carina between the shoulders frequently compresso-cristate or the dorsum strongly compressed and foliaceous; the lateral lobes of pronotum more or less laminate, reflexed outwards, and

\* pp. 213-244, Plate XXI, 1907.

dentate produced or obliquely truncate behind; elytra and wings of ordinary form; the first and third articles of the posterior tarsi equal in length.

The species so far known occur in South America.

Genus *LOPHOTETTIX*, nov.

Resembling *Gladiotettix* (*Nephele*), but differing in having stouter, more dilated, and flattened antennæ, in the fewer antennal joints, which consist of but ten distinct articles, the somewhat stouter and more rugose body, the more distinctly compresso-foliaceous dorsum of pronotum, and in the more laminate lateral lobes.

The type is *L. brevicristatus* described below.

1. *L. brevicristatus*, sp. nov. (Plate XXII, fig. 1, *a* & *b*.)

A moderately crassate form (female) bearing a low dorsal crest between the shoulders, the body strongly rugose, ferruginous. Antennæ very thick, consisting of ten conspicuous articles (a minute barely distinguishable acute apical article might be considered as the eleventh), the first article short and thickened, the second small and globose, from the third to the seventh inclusive gradually dilated toward the individual apices, the eighth and ninth dilated at the middle and subexcavated longitudinally, the last articles pale yellow, antennæ inserted far anterior to or below the eyes; the posterior ocelli situated opposite the lower margin of the eyes. Vertex very wide, transverse, not at all produced, little more than twice the width of one of the prominent globose, substylate eyes, the front transversely imperfectly carinate, bearing on each side a small tuberculiform carinula next to the eyes opposite their anterior fourth, and foveate on each side of the obscure median carina between the middle of the eyes; frontal costa abruptly widened between the posterior ocelli, parallel, the facial carina above depressed, costa between the antennæ distinctly protuberant. Pronotum anteriorly truncate, but shallowly excavate at the middle; dorsum between the shoulders compresso-cristate (about three millimeters in height above the shoulders), the crest highest between the humeral angles, somewhat translucent punctate when held against the light, the front margin roundly excavate, dentate-crenulate, above anteriorly little angulate produced as far as the anterior sulcus; dorsal margin of crest viewed from above not sulcate but strongly sinuate; viewed in profile arcuate and crenulate-sinuate, posteriorly opposite the articulation of hind femora, suberose

and dentate; dorsum rugose and on posterior process rugose-reticulose; humeral angles not prominent and widely subrounded, process lengthily subulate, apex little upturned and acute, extended beyond the apices of posterior femora; lateral lobes posteriorly bisinuate, posterior angles distinctly laminate and terminating in a laterally produced obtuse denticle, behind minutely serrulate, truncate. Elytra of moderate size, externally punctate, substraight or concave above, strongly arcuate below, apices narrowly rounded; wings fully explicate reaching nearly to the apex of pronotal process. Anterior and middle femora elongate, margins sinuate sublobate, superior carinæ of middle tibiæ compresso-dentate at the middle; margins of posterior femora minutely serrulate and sinuate-dentate, the antegenicular and genicular lobes stout and prominent; hind tibiæ fuscous, the margins lightly serrulate and armed with rather obtuse spines, the first articles of the posterior tarsi having the third obtuse pulvilli little longer than the second.

Entire length of body, female, 14 mm.; pronotum 13 mm.; antennæ 4.5 mm.; post. femora 6 mm.

One example from Brazil, South America, in the University Museum, Oxford.

## 2. *L. altieristatus*, sp. nov.

Differing from the preceding species in the darker almost black body, slightly tomentose below, in the dorsum bearing a much higher foliaceous crest, and in the obliquely truncate laminate subacute posterior angles of lateral lobes of pronotum, scarcely at all dentate produced laterally.

Body rugose; vertex very wide, transverse; eyes substylate; the transverse frontal carinulæ obsolete. Antennæ black and pale annulate at the joints, articles strongly dilated towards the individual apices and margins minutely serrulate and pilose; maxillary palpi having the two last articles flattened, dilated, the penultimate article oval, pilose. Pronotum anteriorly truncate, posteriorly subulate, and little longitudinally concave; dorsal crest strongly elevated between the shoulders equal to three and a half millimeters above the humeral angles, margin not at all sulcate, viewed in profile the front margin vertical erose and flush with the anterior border of the pronotum, the convex dorsal margin sloping backward and reaching as far as the middle of the wings, forward minutely denticulate and sinuate, behind dentate, viewed from above strongly sinuate, dorsum on either side and on the process lightly reticulate. Wings fully explicate, reaching scarcely beyond the pronotal apex; elytra having venate marking, punctate, and

apices somewhat widely rounded. Anterior and middle femoral margins sinuate-sublobate; middle femoral margins above acutely produced at the apices, the middle tibiæ pale annulate at the middle and margins little compresso-tuberculate; apical half of tarsi black.

Entire length of body, female, to end of wings 15 mm.; pronotum 13.5 mm.; (posterior femora mutilated.)

One example from Brazil, South America, collected by Bates; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

3. *L. unicristatus*, Hancock, Gen. Insectorum, 48 Fasc. Orthoptera, p. 40, 1906.

This is the species mentioned as above, in "Genera Insectorum," as *Nephele unicrista*. It was described by the author from a male example from British Guiana, which is in Bruner's collection. As my former description still remains unpublished, the following note may be of interest:

Allied to *alticristatus*, resembling it in colour of body, but differing in the somewhat smaller dorsal crest of pronotum, having its front border roundly excavate, minutely serrulate, and here bearing a median denticle as in *brevicristatus*, the anterior border above angulate but not denticulate produced, the dorsal margin of crest more evenly arcuate longitudinally from the front backwards, and being here slightly rugose subsinuate but not sinuate-erose as in *alticristatus*. Wings fully explicate, reaching backward nearly to the abruptly upturned pronotal apex. The first articles of the posterior tarsi bearing very small pulvilli, the third being very little longer than the rest.

Length of the entire body of the female 13 mm.; pronotum 12 mm.; posterior femora 6 mm.

One example collected by Bates in Colombia, South America; from the W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Genus GLADIOTETTIX, Hancock.

Genera Insectorum, 48 Fasc. Orthopt. p. 40, 1906.

= *Nephele*, Bolivar.

1. *G. turgidus* (Bolivar).

= *Nephele turgida*, Bolivar, Ann. Soc. Ent. Belg., xxxi, p. 252, 1887.



One male example from Brazil, South America, collected by Bates; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Section *CLADONOTÆ*, Bolivar.

Genus *PIEZOTETTIX*, Bol.

1. *P. truncatus*, sp. nov.

Resembling *cultratus* in having the margin of the dorsal crest entire, but differing in the arcuate profile and smaller stature.

Body granulate, coloured ochreous, slightly obscure fusco-marmorate on legs and median carina. Vertex wide, tumid, and elevated above the eyes, not at all transversely carinulate, but bearing a small carinula next to the eyes; frontal costa incrassate but in profile scarcely at all produced between the antennæ, the face advanced before the eyes nearly equal to one-half the width of one of the strongly conoidal eyes; superior ocelli placed much in advance of and opposite the lower fourth of the eyes; antennæ inserted barely below the anterior inferior margin of the eyes, shorter than the vertical diameter of the head; maxillary palpi little dilated. Pronotum strongly tectiform cristate, the dorsal margin of crest entire, arcuate, but not highly arched, viewed in front deltoidal; the lateral surfaces forward at the sulci rugulose, subvenose; lateral carinæ distinctly expressed; anterior margin in profile arcuate produced over and little beyond the head, angulate, subobtuse at the apex, posteriorly more sloping and abbreviated, the apex angularly truncate-incised, the process only extended to about the distal third of the hind femora. Elytra and wings wanting. Superior margins of anterior and middle femora entire, the inferior margins undulate or the anterior barely subunilobate, the mesothoracic subtrilobate; the posterior femora moderately inflated, antegenicular lobe somewhat conspicuous, the outer pagina above lightly nodulose, and externally bearing oblique rugulæ; hind tibiæ rather crassate, the margins armed with valid spines about four on the inside, and five on the outside; first articles of the posterior tarsi elongate, more than twice the length of the third, the three pulvilli subobtuse, gradually increasing in size from first to last.

Length of the entire body, female, 14.5 mm.; pronotum 11.5 mm.; posterior femora 8 mm.

One example from Morty Island, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

## Genus HOLOARCUS, nov.

Resembling *Piezotettix*, but differing in having all the margins of the pronotal crest entire and arcuate, the summit sulcate, in the almost obsolete lateral carinæ, in the acute angled apex of posterior process, and the strongly dilated hind femora bearing denticulate margins.

Including the type *altinotus* herewith described, *Piezotettix arcuatus*, Haan, and *Piezotettix sulcatus*, Stål.

1. *H. altinotus*, sp. nov. (Plate XXII, fig. 2.)

Allied to *arcuatus*, Haan. Body ochreous-ferruginous; vertex wide, about twice the width of one of the eyes, elevated considerably higher than the eyes, tumid, with minute vestigial carinulæ on each side next to the apices of the conoidal eyes; frontal scutellum triangular and open below, very slightly arcuate between the antennæ; the antennæ short filiform, as long as the face from vertex to clypeate margin below, inserted barely below the eyes; posterior ocelli placed distinctly in advance and little below the middle of the eyes; maxillary palpi having the last articles dilated, hirsute. Pronotum strongly compresso-foliaceous, the whole crest punctate-translucent when held against the light; anteriorly advanced over and beyond the head, the dorsal margin of crest presenting a highly arcuate outline in profile but little depressed forward above the lateral lobes, the summit sulcate, posteriorly the crest more sloping than in front, the apex acute angulate and extending backwards nearly to the apices of the posterior femora; sides of pronotum little rugose bearing light radiating reticulations; the lateral carinæ very little expressed. Superior margins of anterior femora entire, the inferior lightly bidentate; middle femora elongate, margins subentire; posterior femora strongly dilated, the superior margin strongly arcuate, from the middle backward tridentate, the antegenicular and genicular lobes acute, the external pagina above longitudinally nodulose, bearing oblique rugæ forward between the carinæ but scabrous and interrupted distally; hind tibiæ rather stout, the margins armed with ten or eleven valid spines, the inner margin having about six or seven spines; first articles of the posterior tarsi elongate, the third pulvilli distinctly longer than the second. Valves of the female ovipositor having the superior glades constricted at the middle, slender and denticulate.

Entire length of body, female (same as pronotum), 13.5 mm.; posterior femora 9 mm.; width 3.5 mm.

One example from Aru Islands, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Genus OXYPHYLLUM, nov.

Allied to *Xerophyllum*. Vertex wider than one of the eyes, little elevated, transversely carinate, middle carinate and strongly advanced beyond the eyes; frontal scutellum elongate gradually widened below, divided much above the posterior ocelli, just below the transverse carina of vertex between the upper part of the eyes; scutellum in profile little convexly elevated between the antennæ and sinuate between the upper part of the eyes; antennæ filiform, articles strongly elongate, inserted just between the lower margin of the eyes, the distance between them wider than that to the eyes. Pronotum strongly compresso-foliaceous, arcuate, entire, the crest thin and punctate-translucent, the summit regularly arcuate, not sulcate when viewed from above but sinuate, anteriorly extended over and beyond the head, posteriorly formed into a lengthily extended subulate acute process, passing much beyond the femoral apices; lateral lobes of pronotum posteriorly bisinuate, the posterior angles turned down somewhat obliquely and narrowly excised. Elytra oval; wings fully explicate. Anterior and middle femora little compressed, margins below somewhat lobate; posterior femora not at all dilated, elongate, the superior margins minutely denticulate, inferior margins sublobate-dentate, the antegenicular and genicular lobes small; first articles of the posterior tarsi little longer than the third.

The type is *O. pennatum*, described below.

1. *O. pennatum*, sp. nov. (Plate XXII, fig. 3.)

Body rather shining granulate; face little oblique; colour greyish-rufescent, bearing an obscure triangular marking on each side of the dorsum just above the apices of the elytra. Pronotum having the crest strongly elevated, the forward part anterior to the articulation of the hind femora regularly arcuate, behind that point gently slowing backward and slightly concave toward the pronotal apex, the process thin, acute and extended backward nearly to the apices of the outstretched hind tibiæ. Elytra oblong, finely reticulate, wings extended beyond the pronotal apex. Anterior and middle femora little compressed, the margins minutely serrulate, the inferior margins bearing two obtuse lobes; superior margins of middle femora little compressed, subundulate; hind tibiæ pale ochreous, and armed with weak spines; the first articles of the posterior tarsi

little longer than the third, all the pulvilli somewhat spiculate, the third nearly as long as the first and second combined and flat below.

Length of pronotum, female, 15 mm.; height of dorsum from humeral angles to the summit of crest 4.5 mm.; posterior femora 6 mm.; wings passing the pronotal apex 1.5 mm.

One example from Darjeeling, India, in the University Museum, Oxford.

THE GENUS *Cladonotus*, SAUSSURE, AND ITS ALLIES.

A study of the genus CLADONOTUS, Saussure, based on material in hand as well as the described species, would indicate that members of three genera are included within the genus as interpreted by Bolivar, that is taking the species in his "Essai"\* and those described since the latter was published. These groups are presented in the following diagnostic table:

- 1. Pronotum bearing a ramose process or crest, the front margin produced over the head, frontal facial scutellum widely concave between the antennæ . . . . . [NOTUS, Saussure. I, Type genus CLADONOTUS, Saussure.
    - A. Pronotal ramose process nearly vertical, bimarginate-serrulate behind . . . . . *C. latiramus*, Hancock.
      - A.A. Pronotal ramose process distinctly curved forward, extending forward beyond the head . . . . . *C. humberianus*, Saussure.
        - A.A.A. Pronotal crest bifid, undulate, denticulate at the summit . . . . . *C. echinatus*, Stål.
- 1.1. Pronotum destitute of ramose process, but often gibbose, or cristulate † . . . . .
  - 2. Lateral lobes of pronotum having the posterior angles somewhat smoothly laminate, obliquely truncate, the apices rounded, not at all armed . . . . .

\* Ann. Soc. Ent. Belg., xxxi, pp. 208-209, 1887.

† See description of *Gignotettix* further on, which is allied to *Cladonotus*.

3. Pronotum elevated between the shoulders, gibbose on each side of summit, flattened, declivous backwards; body asperous, viewed in front subquadrate; front margin truncate, tricarinate, not or very little produced at the middle. . . . . II, genus CLADONO- [TELLA, NOV.]
- A. Posterior femora having the superior margin armed with three acute trigonal spines . *C. gibbosa*, Haan.
- A.A. Posterior femora having the superior margin undulate, the femoral and genicular spines large, triangular . . . . . *C. beccarii*, Bolivar.
- 2.2. Lateral lobes having the posterior angles strongly laminate-expanded, obliquely truncate, or erose-spiniform . . . . .
- 3.3. Pronotum depressed, median carina cristulate-sinuate, dorsum posteriorly strongly fossulate reticulate, between the shoulders profoundly impressed, apex of process often angulate excised or abruptly acute; rami of frontal facial scutellum only slightly separated, often angulate, protuberant above antennal insertion . . . . . III, genus TETILOBUS, [NOV.]
- A. Lateral lobes of pronotum having the posterior angles strongly laminate expanded, erose-spiniform; spines of vertex elevated much above the eyes . . . . . *T. spinifrons*, sp. nov.
- A.A. Lateral lobes having the posterior angles obliquely truncate, minutely serrulate . . . . . *T. interruptus*, Bolivar

## Genus CLADONOTELLA, nov.

(Described in the diagnostic table.)

1. *C. beccarii*, Bolivar, Ann. Mus. Civ. Nat. Genova, ser. 2a, xix (xxxix), p. 66, 1898 = *Cladonotus beccarii*.

One female example referable to this species, collected by Wallace in New Guinea; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

## Genus TETTILOBUS, nov.

(See diagnostic table.)

Resembling *Cladonotus*, Saussure. Body depressed; vertex on each side next to the eyes acuminate produced, spiniform, the vertical spines often elevated above the eyes; facial scutellum having the rami little separated, subparallel and not concave. Pronotum anteriorly truncate, tricarinate, little compressed; median carina cristulate-sinuate; dorsum profoundly impressed between the shoulders, process behind often angularly excised or narrowly acuminate, often reaching to the apex of the posterior femora; lateral lobes of pronotum distinctly laminate expanded, either obliquely truncate and minutely serrate or erose spiniform. Elytra and wings wanting. Anterior and middle femoral margins strongly lobato-spinose, the tibiæ having the superior margins bidentate; posterior femora strongly lobato-spinose, the superior external area plurigibbose, the carinæ often bearing produced tubercles or spines; posterior tibial margins armed with spines; first articles of the posterior tarsi subequal in length, the first and second pulvilli minute or subobsolete.

The type is *T. spinifrons*, described herewith. The species *Cladonotus interruptus*, Bolivar, also belongs to this new genus.

1. *T. spinifrons*, sp. nov. (Plate XXII, fig. 4.)

Allied to *Cladonotus interruptus*, Bolivar. Dark ferruginous, little tomentose underneath; vertex nearly twice the width of one of the small globose eyes, bearing a small acute produced spine on each side next to the eyes, projecting much above the eyes; facial carina above depressed, scutellum in profile having the rami strongly angularly protuberant slightly above the point of insertion of the antennæ; posterior ocelli placed between the inferior part of the



eyes. Pronotum anteriorly truncate, behind the margin tricarinate, the prozonal carinæ compressed; dorsum forward between the shoulders rather roundly elevated, cristate; median carina strongly sinuate, but continuous throughout; dorsum profoundly fossulate-reticulate; lateral carinæ sinuate and serrulate, bearing spiniform tubercles backward, and near the apex abruptly narrowed acuminate, the apex curved upwards; lateral lobes of pronotum widely laminate expanded, subtransverse, arose, behind produced in spiniform tubercles. Anterior and middle femora strongly trilobate-spinose, superior tibial margins bituberculate; posterior femora having the apices trispinose and bearing a large triangular lobe, the antegenicular spine produced, the superior margins bearing a denticle near the middle, superior area of the external pagina multigibbose or nodulose, the external carinæ armed with one tubercle above and two below distinctly evident when viewed from above; hind tibiæ obscure fuscous with pale annulations near the knee; the third pulvilli of the first tarsal articles flat below, the first and second very small and little acute.

Length of the entire body, 9 mm.; pronotum 7 mm.; posterior femora 4 mm.

One example from Ceylon in the University Museum, Oxford.

#### Genus GIGNOTETTIX, nov.

(Not in preceding table.)

Related to *Cladonotus*, Saussure, but having the pronotum truncate anteriorly, and destitute of ramose process, the dorsum gibbose forward in the middle, but not gibbose on each side of summit as in *Cladonotella*; the lateral lobes having the posterior angles somewhat scabrous, laminate and obtuse, truncate obliquely behind, the margins of lobe minutely armed with setæ. Body tomentose, not bearing spiniform tubercles; stature very small, face nearly vertical; vertex very wide, bearing a tubercle on each side next to the eyes, but not acute, middle dentate-carinate produced. Pronotum shortened, truncate anteriorly, the dorsum compresso-gibbose forward, posteriorly flattened declivous, apex truncate-emarginate; prozonal carinæ small and little compressed. Elytra and wings wanting. Anterior and middle femora strongly compressed, margins distinctly lobate, superior tibial carinæ lobate, posterior femora having the proximal half crassate, the distal half reduced, superior external area and external surface below nodulose and scabrous, antegenicular lobes very large, triangular but not acute, the genicular lobes less prominent; first articles of the posterior tarsi little longer than the

third; the first and second pulvilli minute subobsolete, the third longer than the rest.

The type is *G. burri*, described herewith.

1. *G. burri*, sp. nov. (Plate XXII, fig. 5.)

Stature very small, fuscous, body destitute of ramose process and spiniform tubercles, but tomentose and scabrous; vertex very wide, more than twice the width of one of the moderately small globose eyes, trituberculate in front, the middle tubercle little produced, occiput mammiliform on each side; frontal scutellum widely separated concave between the antennæ, the facial costa above between the eyes subobsolete, facial profile advanced beyond the eyes, the rami distinctly protuberant between the antennæ. Pronotum scabrous, anteriorly truncate, between the shoulders compresso-gibbose, the summit slightly sinuate, behind the gibbosity flattened declivous, bearing a tubercle on each side; median carina very uneven; prozonal carinæ abbreviated and somewhat tuberculiform; dorsum over process nearly horizontal; lateral carinæ distinct and armed with minute setæ, apex of process emarginate, not extended to the apices of the hind femora; lateral margins at the middle distinctly elevated and tuberculate. Elytra and wings wanting. Margins of femora armed with minute setæ, superior margin of anterior femora distinctly compressed bilobate, the inferior margins bidentate, the denticle behind the apex prominent, middle femoral margins bi- or trilobate above and below; posterior femora having the external paginæ nodulose, the external carinæ below the middle obtuse tuberculate, the anterior half of femora ampliate, the posterior half reduced, the triangular antegenicular lobe more prominent than the genicular lobes; spines of posterior tibiæ valid; first articles of posterior tarsi little longer than the third.

Entire length of body, male, 7 mm.; pronotum 4.5 mm.; posterior femora 4.7 mm.

One example, No. 9346, from Pundaluoya, Ceylon, collected by E. E. Green; presented by Malcolm Burr to the University Museum, Oxford.

This interesting species is dedicated to the distinguished orthopterist, Mr. Malcolm Burr.

Genus *DASYLEUROTETTIX*, Rehn.

1. *D. currii*, Rehn, Proc. Acad. Nat. Sci. Philadelphia, pp. 658-659, 1904.

Two male examples, Nos. 5836 and 5837, from S.E.

Rhodesia, Africa, Umtali, 3700 ft., October 29, 1905, presented by Guy Marshall; one male from Zambesi, Africa, 3000 ft., Victoria Falls, Rain forest, September 13, 1905, presented by Professor Hudson Beare to the University Museum, Oxford.

All three examples present shorter wings than occurs in the type examples, specimens of which are in the author's collection.

Section *SCELIMENÆ*, Bolivar.

Genus *SCELIMENA*, Serv.

1. *S. producta*, Serv. (?) Hist. Nat. des Orthopt., p. 762, 1839.

A male and female example having no locality given, are doubtfully referred to this species; presented by Malcolm Burr to the University Museum, Oxford.

Genus *EUGAVIALIDIUM*, Hanc.

1. *E. novæ-guinææ*, Bol. (?) Ann. Mus. Civ. Stor. Nat. Genova, Ser. 2, xix, p. 3, 1898.

One female example having no locality, doubtfully referred to this species. This specimen resembles the typical species from New Guinea, in the author's collection. The example in the University Museum, Oxford, bears a label on which is written "E. Mus. Leyden, 1869."

Genus *CRITOTTIX*, Bolivar.

1. *Criotettix* sp.

One male example, no locality label; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford. A slender species having smooth pronotum, the head compressed, elevated, the eyes globose, and with narrow vertex.

2. *C. angulatus*, sp. nov.

About the size and general form of *tricarinatus*, Bolivar, but having the pronotal carinæ very slightly expressed; the vertex nearly equal in width to one of the eyes, not at all advanced beyond the eyes; the pronotum having the posterior angles of the lateral lobes angulate, subacute but not spined; body fuscous on the dorsum

the anterior and middle femora and sides pale, the hind femora and tibiæ fusco-variegated; wings fully explicate passing little beyond the slender process.

Entire length of body, female 12·5 mm.; pronotum 11·5 mm.; posterior femora, 5·5 mm.

The specific name *angulatus* refers to the angulate lateral lobes of pronotum.

One example from Dorey Island, New Guinea, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

The above species was compared with examples of *tricarinatus*, generously contributed to the author's collection by Professor Bolivar.

#### Genus ACANTHOLOBUS, Hancock.

1. *A. longinotus*, Hancock, Trans. Ent. Soc. London, p. 221, 1907.

Two male examples from Sarawak, Borneo, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

2. *A. bispinosus* (Dalm.) (?) Vet. Akad. Hand., p. 77, 1818.  
*Criotettix bispinosus*, Bolivar, Ann. Soc. Ent. Belg. xxxi, p. 226, 1887.

One female example from Borneo, No. 7263, labelled "Tettix pallitarsus Walk"; A. De Borman's collection, in University Museum, Oxford.

This example is more slender in stature than the average specimen in the author's collection from Java, and it is not typical; it differs in the somewhat narrower vertex, and the less acuminate spines of lateral lobes. It resembles *longinotus* in stature, but the posterior angles of lateral lobes differ in bearing acuminate spines, still not so produced as in *bispinosus*. For the reasons just given it is questionably referred to this species until further specimens come to hand.

3. *A. miliarius* (Bolivar), Ann. Soc. Ent. Belg. xxxi, p. 226, 1887.

One example from Ceylon, collected by E. Ernest Green; presented by Malcolm Burr to the University Museum, Oxford.

Genus LOXILOBUS, Hancock.

1. *L. rugosus*, Hancock, *Spolia Zeylanica*, ii, pp. 135-136, Plate III, figs. 17-17b, 1904.

Two male and one female (No. 9470) examples from Pundaluoya, Ceylon, collected by E. Ernest Green; presented by Malcolm Burr to the University Museum, Oxford.

This species has characters assigning it a place near *Coptotettix*.

Genus SYSTOLEDERUS, Bol.

1. *S. ridleyi*, sp. nov.

Body cinereous, the posterior tibiæ fuscous, pale annulate behind the knee and at the middle; head scarcely exerted; vertex strongly narrowed, subelevated forward; eyes strongly approximate in front, moderately prominent; frontal costa not at all sinuate, and not produced, moderately compressed between the antennæ. Pronotum smoothly granulate, convex between the shoulders; median carina scarcely at all expressed and obliterated behind the anterior margin; anterior prozonal and humero-lateral carinæ subobliterated; apical process extended little beyond the apices of posterior femora, the three carinæ above posteriorly little distinct; lateral lobes oblique below and little reflexed outwards, the posterior angles obtuse, obliquely excised behind. Elytral apices very narrowly rounded, though moderately wide at the middle; wings reaching to the apex of pronotal process. Anterior and middle femora compressed, the length of the middle femora equal to about three and a half times the width; the third pulvillus of the posterior tarsi little longer than the rest.

Entire length of body, female, 11·8 mm.; pronotum 11 mm.; posterior femora 5·8 mm.

One example from Singapore Botanical Gardens. This species is dedicated to Mr. H. N. Ridley, who collected and presented the type example to the University Museum, Oxford. This species is closely allied to *S. cinereus*, Brunner, described from one example from Burmah (in *Rev. du Syst. Orthopt.*, p. 105, Genova, 1893).

Genus MORPHOPUS, Bolivar.

1. *M. folipes*, sp. nov.

Resembling *phyllocerus*. Body bearing compressed carinæ, scabrous, colour light ferruginous or rufous fusco-variegated, eyes fuscous,

dorsal disc behind the shoulders fusco-bimaculate; vertex narrower than one of the eyes in the male, subequal in the female, little narrowed forward, transversely carinate, the carinulæ rather roundly compresso-elevated on each side, middle lightly carinate, in profile not advanced beyond the eyes; frontal costa arcuately elevated between the antennæ, rather widely sulcate, the rami straight; antennæ short and not as long as the head, inserted distinctly below or anterior to the eyes. Pronotum depressed, anteriorly truncate, dilated between the distinct humeral angles, carinæ laterally little compressed just behind the shoulders, the subulate apical process lengthily extended backward beyond the posterior femoral apices; dorsum rugose tuberculate, between the shoulders bearing abbreviated carinulæ; median carina bicristate forward, strongly sinuate just before the shoulders, the forward crest often little higher than the second elevation; median carina posteriorly very little compressed and straight, minutely serrate; lateral carinæ strongly compressed at the shoulders, posteriorly on the process serrulate; prozonal carinæ, short, little expressed and parallel; posterior angles of the lateral lobes distinctly flattened quadrate, the posterior angles obtuse, behind obliquely truncate. Elytra oval; wings fully explicate, extended backward beyond the pronotal process in the female, or not at all in the male. Anterior femora strongly compressed, margins above sinuate, below foliaceo-trilobate, the middle lobe large with sinuate margin; posterior femora scabrous and having the external area between the carinæ tuberculose, the external carinæ bidentate or lobate in the female; hind tibiæ fuscous marked with white at the middle and near the knees; first article of the posterior tarsi longer than the third, the third pulvilli little longer than the rest.

Entire length of body, male and female, 9·8–11·5 mm.; pronotum 9–10·5 mm.; posterior femora 4–4·5 mm.

One male and one female example from Salisbury, 5000 ft., in Mashonaland, taken November 11, 1905; presented by Mr. Guy Marshall to the University Museum, Oxford.

#### Genus PLATYTETTIX, Hancock.

1. *P. reticulatus*, Hancock, Ent. News, Philadelphia, p. 88, 1906.

One male and one female; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

The female example bears the locality Amazon, and was



collected by Bates; the second male example is also from Brazil. The former specimen has the pronotum little more highly arcuate-cristate than the type specimen in the author's collection, from Peru, besides having the apex of the process more obtuse. Until more material is examined these minor structural differences will be ignored as being of no specific importance. This species was figured by the author in *Genera Insectorum*, Fasc. 48 Orthopt., Plate III, fig. 23, 1906.

Genus CRIMISUS, Bolivar.

1. *C. lobatus*, sp. nov.

Body rather crassate; head little exerted; eyes and vertex small; posterior femora strongly incrassate but somewhat depressed, flattened below; colour greyish-ferruginous, obscure fusco-variegated, disc of pronotum rufous. Vertex equal in width to one of the eyes, subwidened forward, the anterior carinulæ slightly roundly lobulate, median carina very small and anteriorly barely produced; frontal costa convex protuberant between the antennæ, slightly sinuate above and below, rather widely sulcate, the rami straight; pronotum distinctly widened between the humeral angles, dorsum scabrous, behind the shoulders strongly depressed, fossulate, sides little compressed; median carina sinuate and pluri-interrupted, between the shoulders little elevated, sinuate, before the shoulders compresso-elevated, posteriorly bearing a series of small compressions; process acute, not reaching to the apices of the hind femora; lateral carinæ of pronotum little compressed and entire. Pronotum planate between the prozonal carinæ; humeral angles distinct and obtuse; lateral lobes flattened, quadrate, the posterior angle obtuse, behind obliquely truncate. Elytra elongate, apices acuminate; wings abbreviated. Superior carinæ of anterior femora undulate, inferior carinæ sinuate, bearing a lobe at the outer third; superior margin of middle femora undulate; the inferior carina trilobate; posterior femora having the superior carina strongly arcuate, dentate towards the apices; first articles of posterior tarsi having the first two pulvilli acute, the third little longer than the rest and flat below.

Length of body entire, female, 8 mm.; pronotum 7.5 mm.; posterior femora 5 mm.

One example from Amazon, South America, collected by Bates; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

This species resembles *C. contractus*, Bol., a Peruvian form.

## Genus LAMELLITETIX, Hancock.

1. *L. acutus*, Hancock, *Spolia Zeylanica*, ii, pp. 126-128, Plate II, fig. 6-6b, 1904.

One male example, No. 9399, from Havahetta, Ceylon, collected by E. Ernest Green; presented by Malcolm Burr to the University Museum, Oxford.

This species was described from a female example from Ceylon. The entire length of the male measures 12 mm. from front to end of pronotal process.

2. *L. pluricarinatus*, sp. nov.

Body slender, ferrugino-fuscous. Head very little exerted; vertex subnarrower or equal to one of the rather small eyes, frontal carinulæ on each side barely elevated, oblique, subtuberculiform; frontal costa compressed above between the eyes and the rami protuberant between the antennæ; posterior ocelli conspicuously placed between the lower third of the eyes. Pronotum moderately narrow between the humeral angles, depressed on the process; dorsum pluricarinate; median carina irregularly sinuate, bicompressed forward and posteriorly depressed but irregularly compressed; dorsum between the shoulders bearing two supplemental abbreviated carinulæ running parallel and compresso-elevated; prozonal carinæ and lateral carinæ in front of the shoulders distinctly expressed; posterior process acuminately prolonged reaching beyond the apices of the outstretched hind tibiæ; posterior angles of lateral lobes, laminate subacute, angulate, behind little subexcavate but widely and obliquely truncate. Elytral apices rounded; wings fully explicate nearly reaching to apex of pronotal process. Anterior and middle femora elongate; third pulvilli of the first posterior tarsal articles nearly as long as the first and second combined and flat below; the first and second subacute; posterior tibiæ infuscated backward towards the apices.

Entire length of body, female, 14.6 mm.; pronotum 13.5 mm.; posterior femora 5.2 mm.

One example from Deltota, Ceylon, No. 9393, presented by Malcolm Burr to the University Museum, Oxford.

This species is easily recognized by the small vertex, the slender body bearing an extremely acuminate pronotal process, and the laminate, subacute, angulate, lateral lobes, instead of the acute transversely produced angles in *acutus*.

Genus MAZARREDIA, Bolivar.

1. *M. sculpta*, Bolivar, Ann. Soc. Ent. Belg., xxxi, p. 240, 1887.

One female example referable to this species, from Assam, India, in the University Museum, Oxford.

The pronotal process is mutilated in this specimen; the hind femora measures only 7 mm. instead of 8.5 mm., given by Bolivar, but it agrees with the description of this insect.

2. *M. dorrea*, sp. nov.

A small abbreviated apterous form, coloured testaceous variegated with fuscous. Resembling the allied species *abbreviata*, Bolivar, inhabiting the Island of Viti. Vertex viewed from above convex at the front border, wider than one of the eyes, little widened anteriorly, the transverse carinulæ subacutely elevated between the anterior third of the eyes, the sides sinuate, median carina little produced; frontal costa scutelliform, little elevated, viewed in front concave, abruptly widened below between the antennæ and strongly compressed-narrowed between the posterior ocelli. Pronotum abbreviated, dorsum scabrous, pluri-impressed but broadly fossulate at the base of the short process, anteriorly subtectiform, humeral angles obsolete, the apex of obtuse process barely emarginate; median carina percurrent biundulate, forward before the shoulders and posteriorly on process convexly elevated, lateral lobes having the posterior angles quadrate, obliquely truncate behind, the angles little reflexed outwards. Anterior and middle femora compressed, superior carinæ of anterior femora entire, longitudinally convex, below triundulate, sublobate; superior carinæ of middle femora obscure undulate nearly straight, the inferior carinæ triundulate-lobate; posterior femora somewhat depresso-incrassate, margins entire, the antegenicular and apical lobes acute; the three pulvilli of the first tarsal articles nearly equal in length.

Entire length of body, female, 9.5 mm.; pronotum 6.5 mm.; posterior femora 5 mm.

One example from Dorey Island, New Guinea, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Genus ORTHOTETTIX, nov.

Related to *Mazarredia*, Bolivar, but having the body smoothly granulate, vertex narrow, the transverse carinulæ strongly oblique

and straight extending backward to the middle of the eyes; middle carinate; frontal costa arcuate, in profile not sinuate, the rami branching little above the posterior ocelli, widely sulcate; posterior ocelli placed between the lower third of the eyes; antennæ filiform rather short, scarcely reaching to the humeral angles, inserted distinctly between the eyes. Pronotum deplanate, fossulate at the base of process, between the shoulders convex; process of pronotum extended backward beyond the apices of the posterior femora; lateral lobes having the posterior angles turned down, obtuse. Femora elongate, margins entire. Elytra oblong, apices rounded; wings fully explicate; first articles of the posterior tarsi rather longer than the third.

Type *O. obliquifrons*, sp. nov., herewith described.

1. *O. obliquifrons*, sp. nov. (Plate XXII, fig. 6.)

Body slender, granulate, colour cinereous very obscurely variegated with fuscous on sides and legs; eyes globose; vertex viewed in front subnarrower than one of the eyes, viewed from above bearing strongly oblique carinulae convergent forward and extended backward on each side to the middle of the eyes, the vertex here a little widened, middle carinate, on each side somewhat foveate; frontal costa arcuate, viewed in front rather widely sulcate, the rami evenly divergent. Pronotum anteriorly truncate, posteriorly lengthily acuminate subulate, extended much beyond the apices of the posterior femora; dorsum deplanate, bearing two indistinct, abbreviated granulate carinulae between the shoulders; median carina very thin but little incrassate between the shoulders, here undulate then depressed behind, and straight on the process and less distinct; prozonal carinae parallel, very lightly expressed; lateral carinae passing forward on the shoulders but indistinctly expressed; humeral angles having the carinae more expressed, widely angulate; posterior angles of lateral lobes turned down, obtuse. Elytra oblong having rounded apices; wings fully explicate reaching to apex of pronotum in male. Anterior and middle femoral margins entire; posterior femora elongate, the prægenicular lobe small, spiculate, the genicular lobe minute; posterior tibiae armed with small spines and serrulate; the first articles of the posterior tarsi little longer than the third, and having the pulvilli flat below, the third longer than the second.

Entire length of body, male, 13 mm.; pronotum 12 mm.; posterior femora 6 mm.

One example from Sarawak, Borneo, collected by

Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Genus CRYPTOTETTIX, Hancock.

1. *C. spinilobus* Hanc., Occas. Memoirs Chicago Ent. Society I, No. 1, pp. 14-15, Pl. I, fig. 6-6*b*, 1900.

One female example, No. 9426, without a locality label; presented by Malcolm Burr to the University Museum, Oxford.

This species inhabits Madagascar.

Genus THORADONTA, nov.

Related to *Mazarredia*. Body scabrous, occiput covered by pronotum to the eyes, head not exerted; stature small, yet somewhat stout. Vertex distinctly wider than one of the eyes, not advanced beyond the eyes, scarcely at all narrowed forward, somewhat imperfectly carinate in front but bearing little abbreviated carinulæ on each side, median carina little distinct forward and little produced, on each side subfossulate, frontal costa moderately sulcate, the rami evenly divergent, branching little behind the posterior ocelli near the vertex, posterior ocelli placed between the middle or barely below the middle of the eyes; maxillary palpi having the apical articles little compressed, often white; antennæ somewhat elongate, inserted below the eyes. Pronotum scabrous, deplanate on the dorsum, anteriorly truncate, posteriorly acute but not spinate, not extended backward to apices of hind femora or little beyond; median carina strongly compresso-sinuate; dorsum between the carinated humeral angles little dilated and bearing a supernumerary abbreviated carinula on each side; lateral carinæ behind the shoulders often little compressed and elevated above the elytra. Elytra oval; wings abbreviated or nearly perfectly explicate. Lateral lobes of pronotum having the posterior angles distinctly laminate expanded and produced in a spine or acute dentate, subtruncate behind. Anterior femora above carinate, below subundulate; middle femoral margins above undulate, below undulate-sublobate; posterior femoral margins arcuate above and below, entire or minutely serrulate, the prægenicular and genicular lobes small, posterior tibiæ somewhat dilated towards the apices, margins spinose; the first and third articles of the posterior tarsi subequal in length.

Type *T. dentata*, described herewith.

There are two species characterized as follows :

1. Lateral lobes having the posterior angles obliquely dentate produced. Species from Penang Island. *T. dentata*, sp. nov.
- 1.1. Lateral lobes having the posterior angles distinctly acute spinate produced, spine transverse. Species Africana, *T. spinata*, sp. nov.

1. *T. dentata*, sp. nov.

Body small, variegated with fuscous, head not at all exserted ; eyes globose but rather small and not at all elevated ; vertex much wider than one of the eyes, advanced nearly as far as the eyes, little fossulate on each side, middle carina little crassate forward and little produced, frontal costa in profile little protuberant between the antennæ, scarcely sinuate above and below ; posterior ocelli placed between the middle of the eyes. Pronotum scabrous, deplanate, somewhat convex between the shoulders ; process acute not reaching to the apices of posterior femora ; median carina sinuate bicristate, roundly compresso-elevated anteriorly above the sulci, subtuberculate on the process ; dorsum between the humeral angles little dilated, the angles distinctly carinate, little compressed, obtuse angulate, just behind the shoulders over the elytra the lateral carinæ compresso-elevated and here sinuous, here also at the base of process the dorsum fossulate and fuscous ; abbreviated carinæ between the shoulders compressed ; posterior angles of the lateral lobes laminate, flattened, acute dentate produced, behind the denticles obliquely truncate. Elytral apices widely rounded ; wings barely passing the process. Posterior femora little incrassate, margins entire ; the second and third pulvilli of the first tarsal articles equal in length, the first small and spiculate below.

Entire length of body, female, 7 mm. ; pronotum 6 mm. ; posterior femora 4 mm.

One example from Prince of Wales Island (or Penang), in the University Museum, Oxford.

2. *T. spinata*, sp. nov. (Plate XXII, fig. 7.)

Nearly allied to the preceding species, resembling it in stature and general form ; colour grey ; vertex wider than one of the eyes ; head not at all exserted ; frontal costa strongly protuberant between the antennæ, scarcely at all sinuate between the eyes ; maxillary palpi having the apical articles white. Pronotum having the posterior angles of the lateral lobes strongly laminate, transversely acute spinate produced. Pulvilli of the first posterior tarsal articles



nearly equal in length, but the first and second acute; middle femora ampliate toward the bases in the male.

Entire length of body, male, 7 mm.; pronotum passing apices of hind femora 5 mm.; posterior femora 3·8 mm.

One example from "Equinoctial Africa," in University Museum, Oxford.

### Genus XISTRA, Bolivar.

1. *X. stylata*, Hancock, Trans. Ent. Soc. London, p. 231, 1907.

One male example from Kandy, Ceylon, collected by E. Ernest Green; presented by Malcolm Burr to the University Museum, Oxford.

The type example, a female, is in the author's collection. It is from Putlam, Ceylon.

### Section TETTIGIÆ.

### Genus EUPARATETTIX, Hancock.

1. *E. personatus*, Bol. Ann. Soc. Ent. Belg. xxxi, p. 278, 1887.

Two male examples; one from Bengal, India; the other from Java, the latter specimen collected and presented by J. W. Miers to the University Museum, Oxford.

Two characters which distinguish this species are: the fuscous or black posterior tibiæ which bear one white annulation behind the knee, and the arcuate frontal costa which is narrowly compressed. At first sight this species recalls the genus *Systolederus*.

2. *E. pilosus*, sp. nov.

Resembling *personatus*. Head little compresso-elevated; eyes elevated above the dorsum; vertex narrower than one of the eyes; narrowed forward, not at all produced beyond the eyes; frontal costa convexly protuberant between the antennæ, little sinuate between the eyes (not arcuate as in *personatus*) the rami somewhat evenly divergent, moderately sulcate. Pronotum slightly scabrous, often fusco-bimaculate behind the disc; forward at the anterior margin and just behind the prozona constricted; median carina undulate, little compresso-elevated behind the anterior margin; humeral angles carinate, dorsum between the shoulders subconvex; posterior process lengthily subulate extended much beyond the posterior femoral apices; posterior angles of the lateral lobes rounded. Elytra oval,

apices widely rounded; wings caudate. Anterior and middle femora distinctly compressed, entire, (wider in the male) the inferior carinæ of middle femora distinctly pilose, middle tibiæ having the carinæ little compressed and distinctly pilose; posterior femora elongate, having margins entire or minutely serrulate above, the femoral lobes minute; the three pulvilli of the first posterior tarsal articles equal in length and spiculate below; posterior tibiæ fuscous bearing a white annulation behind the knee, and a second smaller ring at the distal third part. Body variably coloured, often greyish or rufo-cinereous variegated with fuscous.

Entire length of male and female (to end of wings) 11-12 mm.; pronotum 9.5-10 mm.; posterior femora 4-4.5 mm.

Three male examples from Mysore, India; one male with label bearing words "Central India," and a female with simply "India," collected by Hearsey; University Museum, Oxford.

This species is distinguished from *personatus* by the lightly sinuate frontal costa, the undulate median carina of pronotum, the more scabrous dorsum, the spiculate pulvilli of the first tarsal articles, the more compressed anterior and middle femora, and the hirsute or pilose inferior carinæ of middle femora and the compressed hirsute carinæ of middle tibiæ.

#### Genus PARATETTIX, Bolivar.

1. *P. seaber*, Thunb. Nov. Act. Ups. vii, p. 159, 1815.

= *Telmatettix burri*, Hanc. Occas. Memoirs Chicago Ent. Soc. I, No. 1, p. 10, fig. of male 5-5a, Plate I, 1900.

Three females, two males, and one immature, Nos. 10587-10590, 10791, and 3950. Five of this number are from Mombasa, Africa, 12 miles N.W. of Mazaras, 500 ft., Sept. 23, 1905, collected and presented by Prof. E. B. Poulton to the University Museum, Oxford. No. 3950, is from Natal, Durban, Feb. 11, 1905, collected and presented by G. F. Leigh to the Museum.

Karny has recently described a short-wing form of this species as *P. ugandensis* in Mathem. naturw. Klaase Bd. cxvi, Abt. 1, Feb., p. 26, 1907; "Orthopterenfauna des Sudans." There is one male specimen long-wing form, No. 4750, in the University Museum, which appears to be a variety of *seaber*; it is from Salisbury, 5000 ft., Mashonaland, collected by Mr. Guy Marshall.

2. *P. marshalli*, sp. nov.

Resembling *scaber*, but smaller in stature, having the vertex together with the frontal costa in profile distinctly arcuate, not at all sinuate, the antennæ short, articles not strongly elongate, the median carina of pronotum percurrent, little elevated, entire.

Entire length of body, male, 9 mm.; pronotum 7·5 mm.; posterior femora 4 mm.

The antennæ are inserted between the lower part of the eyes in this species, as they are in *scaber*. Were it not for the narrow truncate front margin of the vertex, *marshalli* might better be assigned a place in the genus *Hedotettix*, as the other characters referred to above ally it with the latter.

One example from Cape Town, Rondebosch, Aug. 17, 1905, collected and presented by Mr. Guy Marshall to the University Museum, Oxford.

The author takes pleasure in naming this species after Mr. Marshall.

3. *P. shelfordi*, sp. nov.

A short-wing form slightly scabrous, colour ferruginous obscurely fusco-bimaculate on the dorsum. Vertex slightly narrower than one of the eyes, fossulate on each side anteriorly; eyes little elevated; frontal costa rather flattened convex in profile between the antennæ and not sinuate between the eyes, widely sulcate, the rami evenly divergent. Pronotum abbreviated, cuneate posteriorly, and laterally bicarinate on process, the apex not reaching to apex of abdomen in the female; humeral angles subindistinct; prozonal carinæ not at all expressed; dorsum subtectiform forward, depressed behind the shoulders; median carina undulate; posterior angles of the lateral lobes widely rounded. Elytra of moderate size, widely rounded at the apices; wings abbreviated, only as long as the pronotal process. Anterior and middle femora compressed, somewhat hirsute; superior valves of female ovipositor strongly broadened towards the bases, acute, produced toward the apices and armed with denticles.

Entire length of body, female, 8 mm.; pronotum 6·5 mm.

One example, No. 1236, from Malay peninsula, Perak, Larut Hills, 4-5000 ft., collected and presented by Mr. R. Shelford to the University Museum, Oxford.

The legs are mutilated in the type specimen.

This species is dedicated to Mr. R. Shelford, the discoverer of the type example.

## Genus TETRIX, Lat.

1. *T. contractus* (Bol.) Ann. Soc. Ent. Belg. xxxi, p. 281, 1887.  
= *Paratettix contractus*, Bol.

One male and one female, examples from Singapore collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum. This species also inhabits the Philippines and Borneo.

2. *T. longipennis*, sp. nov.

A typical *Tetrix* having long wings and subulate pronotal process. Stature small, body somewhat scabrous-tuberculate in the female, smoother granulate in the male; colour variable, more often fuscous, sometimes greyish or testaceous or dark covered with light granulations, disc not maculate, variably marked behind, hind tibiæ infuscated more often lighter behind the knees and distal third part. Vertex wider than one of the rather small eyes, somewhat flattened, front margin barely advanced beyond the eyes, rounded or convex, median carina little produced anteriorly; frontal costa slightly sinuate opposite the eyes, lightly convex between the antennæ; in profile the vertex and facial costa distinctly advanced beyond the eyes. Pronotum often scabrous, anteriorly truncate, posteriorly subulate, extended beyond the femoral apices; dorsum transversely tectiform, subfossulate at base of process; median carina compressed subarcuate anteriorly often undulate in the female, nearly entire in the male; humeral angles carinate; prozonal carinæ parallel, slightly expressed; lateral lobes posteriorly bisinuate, the posterior angles rounded or hebetate. Elytra oval, rather large, apices somewhat widely rounded; wings fully explicate extended beyond the apex of pronotal process. First articles of posterior tarsi twice the length of the third, the pulvilli unequal, the third equal in length to the first and second combined, straight below, the first pulvilli small, acute; anterior femora elongate margins entire; middle femora compressed, in the female the margins undulate, in the male the femora ampliate, margins entire; posterior femora elongate.

Entire length of body, male and female, 9.5–11 mm.; pronotum 8.5–9.5 mm.; posterior femora 4.5–5 mm.

Five examples from Adelaide, S. Australia, in the University Museum, Oxford.

Two examples from Mt. Wellington, Tasmania, collected

by Lea, in the author's collection. The two latter specimens are slightly smaller but agree in other respects with the foregoing description.

This species resembles *Tetrix ornata*, Say, inhabiting North America.

2a. *T. longipennis mutabilis*, form nov.

There is a small short-wing form of *longipennis* from the same localities, which may be given the appellation above noted. It is similar to the preceding form, the body bearing elytra but having the pronotal process and wings abbreviated, not or barely reaching to the apices of the posterior femora.

Entire length of the body, male and female, 7-8 mm.; pronotum 6.5-7.8 mm.; posterior femora 4.8-5 mm.

Nine adults and three larvæ from Adelaide, Australia, in the University Museum, Oxford.

Eight examples from Victoria, Australia, in the author's collection.

The form *mutabilis* is nearly allied to *priscus*, Bol., and may possibly be that species, but if so, Bolivar must have described his species from an immature example.

3. *T. variegatus* (Bol.) Ann. Soc. Ent. Belg. xxxi, p. 106, 1887.

= *Paratettix variegatus*, Bolivar.

Two female examples from Java referable to this species. Example No. 9332 from East Java, Montes Tengger, 4000 ft.; presented by Malcolm Burr to the University Museum, Oxford.

This species was originally described from Ceylon examples. The head is more compresso-elevated than in *Tetrix cuspidata*, Hancock, from Java. The exerted head and elevation of the vertex toward the front allies this species with *Euparatettix*, yet other characters are peculiar also to both *Tetrix* and *Paratettix*.

4. *T. ornata*, Say, Ent. i, p. 137, Plate V, 1824.

One male and one female example from America; one from "U. S."; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

5. *T. granulata*, Kirby, Fauna Bor. Amer. Ins. p, 251, 1837.

One female example from America (in all probability N. America) in the University Museum, Oxford.

The following species of American *Tetrix* and *Nomotettix* are characterized by an obtuse-conical profile to head; the frontal costa between the eyes not at all or barely excavate. These insects are labelled briefly "Amer. b." which Mr. Shelford interprets as America borealis.

6. *T. americana*, sp. nov.

A robust long-wing form of the *granulata* series; body granulate, the vertex not so angulate produced as usual, but formed in an obtuse-rounded angle in profile and not at all or indistinctly sinuate between the eyes; colour dark variegated with fuscous. Head not exserted; vertex wider than one of the moderately sized eyes, equal to about one and a half times, little narrowed forward, the front margin somewhat angulate but not so produced as in *granulata*; frontal carinulae rounding posteriorly into the sides, little compressed; median carina compressed, extended the length of vertex, in profile elevated above the eyes and produced and rounded anteriorly; frontal costa dividing behind the posterior ocelli near the apex, rather widely sulcate, the rami evenly divergent, in profile not at all sinuate between the eyes or rarely subexcavate, the facial costa strongly advanced beyond the eyes; posterior ocelli conspicuously placed free in advance of the middle of the eyes. Pronotum granulate, truncate anteriorly, posteriorly subulate, the process extended beyond the apices of the posterior femora; dorsum tectiform, somewhat broad between the humeral angles; median carina little compressed percurrent, somewhat arcuate forward nearly straight posteriorly; lateral carinae moderately expressed; prozonal carinae slightly expressed and subdivergent posteriorly; lateral lobes having the posterior sinus above shallow; posterior angles rounded. Wings fully explicate; elytra oval, the apices rounded. Femoral margins entire; the first articles of the posterior tarsi nearly twice the length of the third; the third pulvilli flat below and equal in length to the first and second, acute.

Length of body entire, female, 15 mm.; pronotum 11·8 mm.; posterior femora 5·6 mm.; wings passing the pronotal apex 2 mm.

One example from "Amer. b." North America; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.



6a. *T. americana dimorpha*, form nov.

A smaller less robust form, having short wings and abbreviated pronotum, but having other characters similar to the preceding. The frontal costa very little sinuate between the eyes, in profile the vertex obtuse angulate, not so acute as in *brunneri* or *granulata*, and easily distinguished from either of these and other N. American *Tetrix*. The dorsum smoothly granulate, the elytra small, the apices narrowly rounded, the pronotal process posteriorly acute, not reaching to the apex of posterior femora; wings shorter than the pronotal apex.

Entire length of body, male and female, 8-10 mm.; pronotum 7-8 mm.; posterior femora 5.3-6.8 mm.

Four examples from the same collection as the preceding, and from the same locality.

Genus NOMOTETRIX, Morse.

1. *N. validus*, sp. nov.

Distinguished from all the other species by the stouter form in the female, the obtuse conical vertex in profile, strongly produced beyond the eyes, and the absence of excavation of frontal costa between the eyes. Body granulate, colour variable as in *cristatus*. Vertex nearly twice the width of one of the eyes, viewed from above obtuse angulate produced beyond the eyes, the frontal transverse carinulæ on each side roundly flexed or bent backward, little compressed; vertex narrowed forward but little ampliate between the carinulæ, on each side foveate, posteriorly mammillate, median carina somewhat incrassate, prominent, in profile elevated above the eyes and arcuate, anteriorly roundly produced; frontal costa widely sulcate, in profile united with the vertex, strongly obtuse-conical, not at all excavate between the eyes, declivous below, and at the median ocellus barely sinuate; vertex advanced beyond the eyes, equal to about four-fifths the width of one of the eyes; posterior ocelli conspicuously placed, uncovered midway between the frontal costa and front margin of the eyes. Pronotum compresso-cristate, the front margin obtuse angulate produced over the head, not so acute as in *cristatus*; median carina arcuate forward, dorsal margin straight between the humeral angles and somewhat convexly sloping posteriorly; humeral angles widely rounded; process posteriorly cuneate, extended backward nearly to the apices of the posterior femora; the superior sinus of lateral lobes shallow, posterior angles narrowly rounded. Elytra elongate, apices very narrowly rounded

or subacute; wings abbreviated, undeveloped. Anterior and middle femora elongate, compressed, margins entire; posterior femora elongate, superior margin arcuate forward, flattened posteriorly and minutely serrulate the antegenicular lobe of moderate size; first articles of the posterior tarsi nearly twice the length of the third, the pulvilli straight below, the first small, the second and third elongate and subequal in length.

Entire length of body, female, 11 mm.; pronotum 8.8 mm.; posterior femora 6.5 mm.

Two female examples from N. America; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

## 2. *N. arcticus*, sp. nov.

A long-wing form, slender in stature, resembling *validus* in the vertex and frontal costa, but the head presents a more rounded-obtuse conical profile, the pronotum somewhat narrower between the shoulders, the median carina thinly compresso-elevated, arcuate forward of the humeral angles and subulate posteriorly, extended backward beyond the apices of the posterior femora, wings fully explicate passing the apex of pronotal process, the first articles of posterior tarsi having the first and second pulvilli little flattened below but the apices acute, and the third pulvilli little longer than the second, and distinctly flattened below.

Entire length of body, female, 13 mm.; pronotum 10.5 mm.; posterior femora 5 mm.

Two female examples from N. America; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

This species is at once distinguished from *carinatus* by the more tumid face and vertex, which presents a rounded obtuse-conical profile, the absence of excavation between the eyes of the frontal costa, and the more obtuse angulate front margin of pronotum.

### 2a. *N. arcticus obtusus*, form nov.

A short-wing form, probably of *arcticus*. Body small, granulate; vertex having the front margin convex, median carina produced; profile of head obtuse-conical; frontal costa not at all excavate between the eyes. Pronotum having the front margin obtuse angulate, dorsum somewhat narrow between the shoulders; humeral angles widely obtuse, the posterior process abbreviated acute, not

reaching backward to the knees of the hind femora ; median carina strongly compresso-cristate, arcuate forward before the humeral angles, sloping substraight posteriorly ; posterior angles of lateral lobes obtuse. Elytra small, apical margin rounded ; wings shorter than the process. Femoral margins entire ; middle femora in male somewhat ampliate ; first articles of posterior tarsi having the first two pulvilli acute, the third pulvilli elongate and longer than the third and flat below.

Entire length of body, male (to end of hind femora), 8.5 mm. ; pronotum 6.5 mm. ; posterior femora 4.5 mm.

One male example from N. America ; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

### Genus PROTOTETTIX, Bolivar.

#### 1. *P. africanus*, sp. nov.

Body crassate, scabrous, strongly tuberculate, colour ferruginous variegated with fuscous, anterior and middle tibiæ pale annulate. Head not all exerted, face tumid below the eyes ; vertex narrowed forward, wider than one of the eyes, fossulate on each side and bearing small supraocular lobes and rounded frontal carinulæ, middle indistinctly carinate ; frontal costa narrowly compressed, convex between the antennæ, barely sinuate between the eyes, face below sinuate ; antennæ inserted between the lower forward part of the eyes. Pronotum incrassate, convex between the shoulders, and planate behind ; dorsum tuberculose-scabrous ; humeral angles widely obtuse ; posterior process cuneate extended backward nearly to the knees of the hind femora ; median carina strongly irregularly sinuato-interrupted, compresso-elevated forward between the sulci ; prozonal carinæ obscure, tuberculate ; lateral lobes having the inferior margin little reflected outwards, the posterior angles narrowly subobliquely excised. Elytra small, narrow, the apices subacutely rounded ; wings abbreviated. Anterior femora elongate, the inferior margins indistinctly bidenticulate ; middle femoral margins minutely tridenticate ; posterior femora elongate, margins minutely undulate-dentate, external paginæ above strongly longitudinally nodulose, the oblique rugæ externally strongly expressed ; hind tibiæ strongly incrassate, the external carinæ expanded and distinctly armed with spines ; the first articles of the posterior tarsi much longer than the third, the first two pulvilli angulate acute, the third longer than the second, flattened below.

Entire length of body, female, 13.5 mm. ; pronotum 11 mm. ; posterior femora 7.8 mm.

One adult example and five larvæ from S.E. Rhodesia, Melsetter, Gazaland, 3000 ft. Mount Chirinda, "in the forest," October 6, 1905, collected and presented by Guy Marshall to the University Museum, Oxford.

This species resembles *impressus*, differing in the shorter pronotum, and the entire lateral carinæ at the humeral angles, but behind on the process strongly interrupted, irregular, and disappearing backward before the apex. In *impressus*, according to Bolivar, the lateral carinæ present a crenulate margin and the pronotum measures 14 mm. instead of 11 mm. as given above.

### Genus RYTINATETTIX, nov.

Resembling *Prototettix*, Bolivar, but having the stature very small, rugose-tuberculose, the posterior ocelli placed below the middle of the eyes; the vertex wider than one of the moderately small eyes, the frontal costa widely sulcate; the antennæ inserted little before (below) the eyes, the inferior lateral margins of pronotum above the insertion of the elytra sinuate or arcuately excavate; the elytra minute or small; wings abbreviated, the lateral lobes of pronotum little reflexed outwards, somewhat widely rounded and obliquely truncate or hebetate; the anterior and middle femora compressed, margins undulate-lobate, the posterior femora somewhat incrassate, and the first articles of the posterior tarsi little longer than the third.

The type is *Prototettix fossulatus*, Bolivar. To this genus also belongs the species *Prototettix lobulatus* (Stål.), Bol., both inhabiting South America. The creation of the new genus, *Rytinatettix*, leaves only the African species remaining in Bolivar's genus *Prototettix*, namely, *P. impressus* (Stål.), Bol., and *P. africanus*, Hancock. Giglio-Tos\* described a species under the name *Paratettix borellii*, which appears to be synonymous with *Rytinatettix lobulatus* (Stål.).

1. *R. fossulatus*, Bol., Ann. Soc. Ent. Belg. xxxi, p. 251, 1887.

Two male examples from Rio Grande do Sul, Nos. 9258-9259, presented by Malcom Burr to the University Museum, Oxford.

These examples were previously determined by Brunner as "*Paratettix toltecus*," Saussure. The latter species, so

\* Boll. Mus. Torino xii, No. 302, p. 28, 1897.

far as the author's experience goes, does not inhabit South America, but is confined to Mexico and South-Western United States. *R. fossulatus* is distinguished from *P. toltecus* by the broader vertex, the rugose-tuberculate pronotum, and the minute elytra, which are sometimes partially hidden by the inferior lateral margin of the pronotum.

2. *R. lobulatus* (Stål), Freg. Eug. Res. Ins. Orthopt., p. 347, 1860 = *Tettix lobulata* (Stål) and *Paratettix lobulatus* (Stål), Bolivar, and *Paratettix borellii*, Gigliot-Tos. See *ante*.

One male example collected by Bates on the Amazon, South America; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

#### Genus TETTIELLA, nov.

Resembling *Prototettix*, Bolivar, but having the stature small, the eyes very small; the vertex wide, little narrowed forward, more or less advanced beyond the eyes, anteriorly the transverse carinulæ roundly flexed backward on each side, sulcate on each side of median carina, fossulate forward but mammillate posteriorly on each side of occiput. Pronotum anteriorly angulate produced over the head, between the shoulders often tumid, the humeral angles wanting or obsolete, posteriorly the process abbreviated, the apex obtuse or emarginate, not extended backward to apices of the posterior femora, the posterior angles of lateral lobes turned down but more or less obliquely excised or subrounded. Elytra and wings wanting. First articles of posterior tarsi much longer than the third.

The type is *T. arcuata* described herewith. To this genus also belongs: *Tettix dubiosus*, Bol., *Tettix latipes* (Stål), and *Tettiella conofrons*, Hancock, described further on.

1. *T. arcuata*, sp. nov.

Body small, somewhat tumid, strongly rugose-tuberculate, conspersed with pale granulations, colour pale variegated with fuscous, disc of pronotum having a pale tumose excrescence. Vertex wide, equal to twice the width of one of the eyes, narrowed forward, the front margin little advanced beyond the eyes, convex, sulcate on each side of the median carina, fossulate forward and mammillate posteriorly on each side of the occiput, in profile the vertex little elevated

and advanced beyond the eyes ; frontal costa moderately sulcate, the rami evenly divergent, in profile convexly protuberant between the antennæ, sinuate between the eyes, posterior ocelli placed between the submiddle part of the eyes ; antennæ inserted barely anterior to the eyes. Pronotum rugose-scabrous, anteriorly angulate, produced over the head ; dorsum elevated tumid forward, longitudinally arcuate, profoundly impressed behind the disc, process nodulose-tuberculose, posteriorly abbreviated, the apex obtuse emarginate ; median carina in the forward half entire, arcuate, but posteriorly sinuate becoming obsolete toward the apex ; superior lateral carinæ wanting, posterior angles of lateral lobes obliquely excised. Elytra and wings wanting. Anterior and middle femora little compressed, the inferior margin of anterior femora lightly unilobate ; the middle femora above undulate, below trilobate, the middle lobe more distinct ; posterior femora incrassate, the external area scabrous, superior margins granulate and subdentate before the knee, the prægenicular and genicular lobes moderately acute ; hind tibiæ somewhat incrassate, little ampliate toward the apices, armed with acute spines ; first articles of posterior tarsi nearly twice the length of the third, the first and second pulvilli acute, the third flat below and nearly equal in length to the first and second combined.

Entire length of body, female, 8·8 mm. ; pronotum 7·5 mm. ; posterior femora 5 mm.

Two female examples from Cape Town, Africa, 100 ft., Rondebosch, August 17, 1905, collected and presented by Mr. Guy Marshall to the University Museum, Oxford.

## 2. *T. conofrons*, sp. nov.

Stature small, granulate, or little rugose. Resembling *Tettix latipes*, Stål, but having the vertex strongly advanced beyond the eyes, the facial costa barely sinuate between the eyes, head in profile conical, the apex little elevated anteriorly. Pronotum anteriorly obtuse angulate produced, more obtuse in the female, posteriorly not extended to the knees of hind femora, the apex somewhat narrowly obtuse emarginate ; dorsum in female transversely subtumid between the shoulders, or little compresso-tectiform in the male, not impressed behind the disc ; median carina longitudinally convexly arcuate, posteriorly disappearing near the apex ; humeral angles somewhat obscure, nearly straight ; posterior angles of lateral lobes little obliquely excised. Elytra and wings wanting. Anterior and middle femora little compressed, the inferior margins of anterior femora subundulate, of middle triundulate ; the first and second pulvilli



of first tarsal articles small, acute, the third longer than the second, and flat below.

Entire length of body, male and female, 6·5–7·5 mm.; pronotum 4·7–5·5 mm.; posterior femora 3·5–4·5 mm.

Two examples, Nos. 11051 and 11060, from Cape Town, 100 ft., Rondebosch, August 17, 1905, collected and presented by Mr. Guy Marshall to the University Museum, Oxford.

Genus *COPTOTETTIX*, Bolivar.

1. *C. planus*, Bolivar, Ann. Soc. Ent. Belg. xxxi, p. 289, 1887.

One female example from Port Essington, Australia, in the University Museum, Oxford.

2. *C. parvulus*, sp. nov.

A small form with undeveloped wings and abbreviated pronotum; allied to *rufipes*, Bolivar. Body dark gray variegated with fuscous; vertex rather wider than one of the eyes, flattened, fossulate on each side forward; frontal costa little produced beyond the eyes, barely sinuate, narrowly compressed; antennæ inserted between the lower part of the eyes. Pronotum somewhat depressed, rugose, between the shoulders bearing abbreviated carinulæ; humeral angles widely obtuse, nearly straight, process extended backward nearly to the knees of hind femora; lateral carinæ not percurrent forward on the shoulders; median carina undulate, interrupted; posterior angles of the lateral lobes narrowly excised, superior sinus very shallow, the inferior deeply angularly excavate. Elytra oval; wings abbreviated. Anterior and middle femora little compressed, subentire; posterior femora elongate, the prægenicular lobes moderately acute produced, three pulvilli of first tarsal articles acute, and subequal in length.

Entire length of body, male, 7·5 mm.; pronotum 6 mm.; posterior femora 4 mm.

One example, No. 10944, from Zambesi, 3000 ft., Victoria Falls, Africa, "Rain forest," September 13, 1905; collected and presented by Professor Hudson Beare to the University Museum, Oxford.

3. *C. tuberculatus*, Bol., Ann. Soc. Ent. Belg. xxxi, p. 291, 1887.

Two female examples, Nos. 7264–7265, from Borneo; A. de Bormans' collection, labelled "*Tettix similis* Krauss."

## Genus HEDOTETTIX, Bolivar.

1. *H. gracilis*, Haan, Bijdrag. Orthopt. p. 169, 1845.

Two female and three male examples from Madras, India; University Museum, Oxford.

2a. *H. gracilis abortus*, Hancock, Spolia Zeylanica, ii, p. 151, 1904.

Two female examples of this short-wing form from the same locality as preceding (Madras, India); University Museum, Oxford.

3. *H. punctatus*, sp. nov.

A very distinct species, with unknown habitat, resembling *gracilis*, Haan, but having the anterior femora little compressed, the pronotum strongly compresso-cristate, the front margin very distinctly angulate produced over the head, the median carina forward strongly arcuately elevated between the shoulders, very thin and the punctulations translucent when held against the light; the vertex subnarrower than one of the eyes, the front margin obtuse angulate, middle carinate, in profile obtuse but not distinctly rounded, the frontal costa somewhat narrowly sulcate, compressed, the rami subparallel; the wings caudate.

Entire length of body, female, 14.5 mm.; pronotum 11 mm.; posterior femora 5.8 mm.

One example, locality unknown; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

4. *H. affinis*, Bol., Ann. Soc. Ent. Belg. xxxi, p. 285, 1887.

One female example referable to this species from Port Essington, Australia.

5. *H. angustatus*, sp. nov.

A very slender form occupying the border line between *Hedotettix* and *Paratettix*. Body granulate, head very little exserted; antennæ inserted between the lower part of the eyes, articles elongate; eyes little elevated; vertex narrower than one of the eyes, scarcely at all narrowed, or ampliate forward, longitudinally fossulate, in profile advanced beyond the eyes; frontal costa narrowly sulcate, in profile not at all sinuate, convex between the antennæ. Pronotum anteriorly truncate, very narrow between the shoulders; median carina

percurrent, entire, but little elevated, scarcely convex forward and nearly straight on the lengthened posterior process; lateral carinæ distinct; process lengthily extended beyond the apices of posterior femora. Anterior and middle femoral margins entire; posterior femora narrow elongate. Elytra oval; wings caudate, the first and third articles of the posterior tarsi nearly equal in length, the first and second pulvilli acute, the third flat below and longer than the second.

Entire length of body, male and female, 12-13.5 mm.; pronotum 7.8-9.5 mm.; posterior femora 4 mm.

One male and one female from Sarawak, Borneo, collected by Wallace; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

Two male examples from Banguey, Borneo (Staudinger coll.), in the author's collection.

#### Genus MICRONOTUS, Hancock.

1. *M. caudatus* (Sauss.), Orthopt. nova Amer. in Rev. et Mag. de Zool. p. 30, 1861.  
= *Tettix caudatus*, Saussure, = *Paratettix caudatus*, Bolivar.

This species is common in South America and the West Indies. It is subject to considerable variation especially in the female, with respect to the undulation of the median carina of pronotum; just behind the anterior margin it is often cristulate, then taking an undulating course backward, it varies in the size and number of undulations. Represented by nine examples in the University Museum, Oxford, as follows: Three males and one female from Rio de Janeiro (probably), presented by J. W. Miers; one female from Rio Grande do Sul, No. 9256, presented by Malcolm Burr and identified by Brunner v. Wattenwyl; two examples from Island of St. Vincent, West Indies; one example from Brazil (D. Swainson's coll.); one female from Trinidad, West Indies, from W. W. Saunders' coll., presented by Mrs. F. W. Hope.

2. *M. dubius*, sp. nov.

Resembling *hancocki*, Bruner. Body very small, having the frontal costa very slightly sinuate between the eyes; the median carina of pronotum irregularly and minutely sinuate; the dorsum somewhat scabrous, the inferior margin of the middle femora

minutely bilobate. The type presents a light marking covering the disc of the pronotum.

Entire length of body, female, 6 mm.; pronotum 5 mm.; posterior femora 3.3 mm.

One example, from "America Æquatorialis," in the University Museum, Oxford.

#### Genus APOTETTIX, Hancock.

1. *A. proximus*, Hanc., Trans. Ent. Soc. London, p. 237-238, 1907.

These examples have long wings, the body rufescent, the posterior femora striate longitudinally below with fuscous, the tibiæ black, but pale annulate. The pronotal process extends backward beyond the hind femoral apices. This form differs from the short-wing type form, and may bear the distinctive name, *A. proximus appositus*, form nov.

Entire length of body, male, 12 mm.; pronotum 10 mm.; posterior femora 5 mm.

Two male examples from Cachabi, Ecuador, collected by Rosenberg; presented by Malcolm Burr to the University Museum, Oxford.

#### Section *BATRACHIDEÆ*, Bolivar.

#### Genus HALMATETTIX, nov.

Resembling *Batrachidea*, Serville, but differing in having the pronotum compresso-cristate, in the absence of the posterior elytral sinuses, in the apterous body, and in the unarmed femoral apices. Body granulate; face slightly oblique, crown covered by the pronotum; vertex wider than one of the eyes, truncate anteriorly, bearing small carinulate lobes on each side next to the eyes, and distinct supraocular lobes behind; median carina wanting, frontal costa moderately sulcate, the rami slightly incrassate, in profile distinctly advanced beyond the eyes, the facial carina above moderately compressed; antennæ inserted barely below the inferior margin of the eyes; eyes sub-conoidal in profile, of moderate size, but somewhat prominent; maxillary palpi having the apical articles strongly dilated and pale coloured. Pronotum tectiform, the dorsum compresso-cristate, arcuate forward, posterior process not reaching to abdominal apex, the anterior margin strongly acuminate, produced over the head and strongly uncinatè; median carina compressed, thin and entire; prozonal carinæ slightly evident, subparallel,

humeral angles substraight, lateral lobes posteriorly without elytral or inferior sinuses. Elytra and wings wanting; anterior and middle femora slender, margins entire, the superior carinæ not at all spined at the apices.

The type is *Halmatattix cristinotus*, herewith described:

1. *H. cristinotus*, sp. nov. (Plate XXII, fig. 8.)

Body somewhat incrassate, conspersed with light granulations, coloured ferruginous variegated with fuscous, the lateral margins and underneath black; vertex little wider than one of the eyes. Pronotum having the acute apex in front advanced barely beyond the frontal costa, the posterior process obtuse, acuminate toward the apex; lateral margins bicarinate; median carina thinly compressed; elevated, punctate translucent when held against the light.

Entire length of body, female, 14.5 mm.; pronotum 13 mm. (posterior femora mutilated).

One example from Rio de Janeiro (probably), Brazil, collected and presented by J. W. Miers to the University Museum, Oxford.

Genus SCARIA, Bolivar.

1. *S. ferruginea*, sp. nov.

Body moderately crassate, ferruginous, not at all fasciated with fuscous on sides or striate above; head little compresso-elevated, the base of eyes lower than the summit of middle of dorsum; vertex slightly tumid, somewhat smooth granulate, roundly deflexed in front, bearing indistinct small oblique carinulate lobes on each side next to the eyes; frontal costa rounded, little protuberant between the antennæ, narrowly sulcate; eyes large and globose. Pronotum anteriorly produced in a rather valid uncinat spine, the base little oblique; median carina percurrent, nearly horizontal, somewhat compressed and incrassate forward, little ascendant near and toward the front, but posteriorly toward the apex of process indistinct; lateral carinæ percurrent forward on the shoulders and distinctly expressed, process extended beyond the posterior femoral apices. Elytra having each of the bases ferruginous but posteriorly black and bearing a distinct pale præapical macula; wings fully explicate extended beyond the apex of pronotal process. Middle femora armed with an apical spine; anterior femora not armed at the apices; posterior femora having the inferior part fuscous but obscured by a covering of pale granulations; inside of hind femora

infusate, hind tibiæ ferruginous, obscurely infusate at the middle part. The subgenital plate of the female abdomen having the apical marginal sinus broadly and yet quadrately excavate, equal in width to the bases of both inferior blades of ovipositor, the small angulate lobe thus formed on each side smooth, underneath the subgenital plate is infusate.

Entire length of body, female (front to end of wings), 15 mm.; pronotum 12·8 mm.; posterior femora 7·5 mm.

One example from Brazil, S. America, collected by Bates; W. W. Saunders' collection, presented by Mrs. F. W. Hope to the University Museum, Oxford.

## 2. *S. brevis*, sp. nov.

Male.—Colour: dorsum of pronotum, vertex, and the anterior and middle legs brownish ferruginous, face below the eyes and lateral lobes below the middle pale yellow; lateral lobes above obscurely infuscated or pale granulate; the elytra, posterior femora, and hind tibiæ dark infusate; abdomen pale yellow toward the apex. Body small, pronotum and wings abbreviated, elytra immaculate; head little compresso-elevated, the base of the large globose eyes much lower than the middle dorsal summit; vertex smooth, sides convergent forward, nearly equal in width to one of the eyes, viewed from above the frontal costa barely protrudes beyond the anterior border; frontal costa narrowly compressed between the antennæ, in profile convex, the face oblique. Pronotum very small, anteriorly produced in an elevated uncinat spine, posterior process acute not at all extended backward to the knees of hind femora; median carina percurrent, little obliquely ascendant forward, and horizontal posteriorly; prozonal carinæ subexpressed; lateral carinæ distinct at the humeral angles, anterior and middle femoral apices not at all spined.

Entire length of body from front to apices of hind femora, 9·7 mm.; pronotum 7·5 mm.; posterior femora 5·5 mm.

One example from Cachabi, Ecuador, 500 ft., Nov. 1906, collected by Rosenberg; presented by Malcolm Burr to the University Museum, Oxford.

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## EXPLANATION OF PLATE XXII.

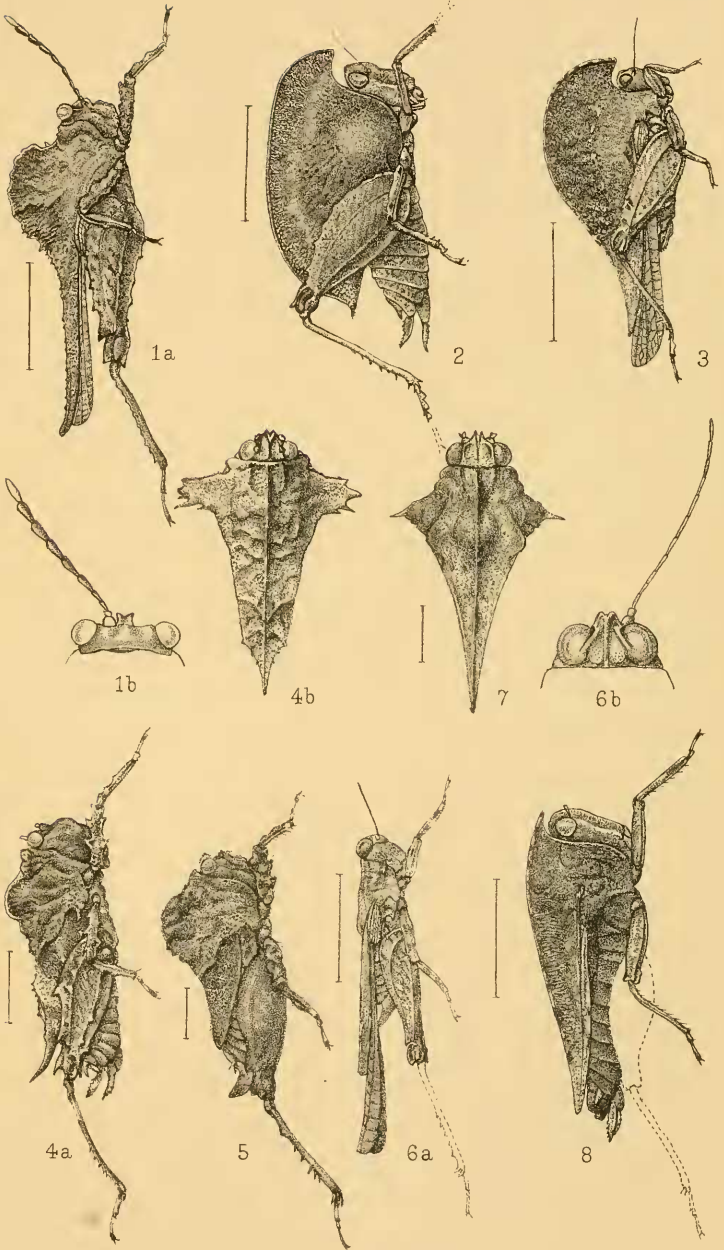
[See *Explanation facing the PLATE.*]



## EXPLANATION OF PLATE XXII.

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- FIG. 1. *Lophotettix brevieristatus*, gen. et sp. nov.  
(a) Side view of body; (b) one of the antennæ and head viewed from above.
2. *Holoarcus altinotus*, gen. et sp. nov.  
Side view of body.
3. *Oxyphyllum pennatum*, gen. et sp. nov.  
Side view of body.
4. *Tettilobus spinifrons*, gen. et sp. nov.  
(a) Side view of body; (b) dorsal view showing the lateral lobe of pronotum with the posterior angle.
5. *Gignotettix burri*, gen. et sp. nov.  
Side view of body.
6. *Orthotettix obliquifrons*, gen. et sp. nov.  
(a) Side view of body; (b) head showing vertex viewed from above.
7. *Thoradonta spinata*, gen. et sp. nov.  
Viewed from above, showing head and lateral lobes of pronotum.
8. *Halmatettix cristinotus*, gen. et sp. nov.  
Side view of body (hind femora missing in type).



H. Knight del. et lith.

West, Newman imp.

NEW SPECIES OF TETRIGINÆ.